BEYOND PESTICIDES
701 E Street, SE ▪ Washington DC 20003
202-543-5450 phone ▪ 202-543-4791 fax
info@beyondpesticides.org ▪ www.beyondpesticides.org

September 30, 2025

Ms. Michelle Arsenault
National Organic Standards Board
USDA-AMS-NOP
1400 Independence Ave. SW
Room 2648-S, Mail Stop 0268
Washington, DC 20250-0268

Docket ID # AMS-NOP-25-0034

Re. HS: §605 Sunsets

These comments to the National Organic Standards Board (NOSB) on its Fall 2025 agenda are submitted on behalf of Beyond Pesticides. Founded in 1981 as a national, grassroots, membership organization that represents community-based organizations and a range of people seeking to bridge the interests of consumers, farmers, and farmworkers, Beyond Pesticides advances improved protections from pesticides and alternative pest management strategies that eliminate a reliance on pesticides. Our membership and network span the 50 states and the world.

Kaolin

Reference: 205.605(a)

The Spring HS review refers to a "2025 TR for kaolin." For the previous NOSB meeting, this TR was not available through the NOP Petitioned Substances Index, nor was a link provided by the HS.[1] We request that NOSB subcommittees avoid referencing materials that are not available to the public.

However, with the public release of the 2025 TR for kaolin, we are happy to see that it describes the ecological impacts of mining and states, "Mining and quarrying inevitably damage biodiversity and ecosystem services."[2] It is important to recognize that even nontoxic nonsynthetic materials can have negative environmental impacts in their production, and thus

[1] https://www.ams.usda.gov/rules-regulations/organic/petitioned-substances/kaolin.
[2] 2025 TR for kaolin, line 189.

the NOSB should avoid approving their use in organic production to the extent possible and certainly when their essentiality is not established.

Kaolin is a fine clay, consisting primarily of hydrous aluminum silicate. Because of the small particle size, it has a high surface-to-volume ratio, making it a highly absorptive material. Although the technical advisory panel (TAP) review identifies it as an anticaking agent and a processing aid that is not present in the final product, there is no annotation to limit its use. Kaolin is also produced in nano-sized particles.[3] Kaolin should be annotated to specify allowed uses and prohibit the use of nano-kaolin. The specified allowed uses should be based on essentiality.

Sodium bicarbonate

Reference: 205.605(a)

Baking soda is the kind of material that was envisioned as populating the National List—a nontoxic natural material used in home kitchens as a leavening agent. We would support listing it on both §205.605(a) and §205.605(b) in order to simplify its allowance and use in organic products.

Waxes –wood rosin

Reference: 205.605(a) Waxes—nonsynthetic (Wood rosin).

There is a possibility that wood rosin extracted by a processor who is not certified may have been extracted using volatile synthetic solvents. There is also a possibility that some certifiers or materials review organizations may permit formulation using ancillary substances that are not permitted in organic products. Finally, consumers should be informed of the presence of nonorganic waxes—organic fruits and vegetables are generally assumed to be 100% organic. Therefore, the listing for wood rosin should be annotated with, "Not extracted using volatile synthetic solvents; contains only ancillary substances approved for organic production; presence must be labeled on individual items." In addition, the NOSB should investigate ways to ensure that wood rosin used in organic production does not contribute to the decline of longleaf pine populations.

Ammonium bicarbonate

Reference: 205.605(b)—for use only as a leavening agent.

Ammonium bicarbonate and ammonium carbonate (together ammonium carbonates) are produced from ammonia, a toxic gas, and carbon dioxide. According to the TAP review, the ammonium carbonates are the only leavening agents that are completely eliminated through the baking process. This is achieved by the emission of ammonia and carbon dioxide. It was the original intention of OFPA that synthetic food additives be prohibited in organic food. Since natural means of leavening are available, ammonium bicarbonate should not be relisted.

---

[3] https://www.researchgate.net/publication/297841906_The_properties_of_Nano-kaolin_mixed_with_kaolin.

Ammonium carbonate

Reference: 205.605(b)—for use only as a leavening agent.

Ammonium bicarbonate and ammonium carbonate (together ammonium carbonates) are produced from ammonia, a toxic gas, and carbon dioxide. According to the TAP review, the ammonium carbonates are the only leavening agents that are completely eliminated through the baking process. This is achieved by the emission of ammonia and carbon dioxide. Although the emissions during baking are minimal, the environmental impacts of manufacturing the precursor ammonia are substantial. The proportion of ammonia used in making ammonium carbonates, while small, is not insignificant.[4]

It was the original intention of OFPA that synthetic food additives be prohibited in organic food. We are also concerned about the creation of acrylamide, a probable human carcinogen, as part of the baking process. According to the 2025 TR, "Acrylamide produced in the presence of ammonium carbonate is more than six times the amount produced in the presence of other leavening agents" [5] Since other means of leavening are available, ammonium carbonates should not be relisted.

Calcium phosphates: monobasic, dibasic, tribasic

Reference: 205.605(b)

Calcium phosphates are used as leavening agents, dough conditioners, and yeast food. Monobasic is also used as a buffer, sequestrant, and firming agent. Tribasic is also used as an anti-caking agent and a buffer.

Phosphate refining releases heavy metals and radioactivity. Phosphates have a number of impacts when used as food additives. According to the TAP review for sodium phosphate, "The toxicity of sodium phosphates is generally related to the sequestration of calcium and the subsequent reduction of ionized calcium. It is an irritant, and ingestion may injure the mouth, throat, and gastrointestinal tract, resulting in nausea, vomiting, cramps, and diarrhea."

More recent studies have shown that inorganic forms of phosphate, such as calcium and sodium phosphates, cause hormone-mediated harm to the cardiovascular system. A review found that they "may harm the health of persons with normal renal function. This judgment has been made on the basis of large-scale epidemiological studies and is supported by the latest findings of basic research."[6] This is an important line of research.

In Fall 2016, the HS issued a discussion document on phosphates, which made these points:

---

[4] 2025 TR lines 835-847.

[5] 2025 TR lines 916-924.

[6] Ritz, E., Hahn, K., Ketteler, M., Kuhlmann, M. K., & Mann, J. (2012). Phosphate Additives in Food—a Health Risk. *Deutsches Ärzteblatt International*, *109*(4), 49–55.

- Outside the U.S. and Canada, the only phosphate additive allowed in organic processed food is monocalcium phosphate, and only as a leavening agent.
- During the 2015 Sunset review, the NOSB received comments including new research that indicates potential serious human health impacts from the cumulative effects of phosphates which are added to processed foods.
- The NOSB may recommend increased restrictions through annotations or removal of phosphate food additives.
- Because the health effect comes from the cumulative impact, rather than any specific phosphate alone, the NOSB was reluctant to remove any one phosphate from the National List.

Since it can be concluded that phosphates other than monocalcium phosphate as a leavening agent are unnecessary, they should be phased out. Presumably, this would greatly reduce the phosphate exposure to organic consumers. Alternatives to monocalcium phosphate should also be explored, but the action of removing other phosphates would reduce the likelihood of problems arising from use of monocalcium phosphate as a leavening agent.

Low acyl gellan gum

Reference: 205.605(b)

Beyond Pesticides opposes the listing of low acyl gellan gum on §205.605(b) because it is a synthetic additive that is not necessary for organic food production. The Organic Foods Production Act (OFPA) establishes criteria for listing materials that may be used in organic production and handling that are "otherwise prohibited." Synthetic and nonorganic materials are prohibited unless specifically allowed. The criteria for allowing such "otherwise prohibited" substances to be allowed in organic production and handling include that the substance "is necessary to the production or handling of the agricultural product because of the unavailability of wholly natural substitute products" and that it "is consistent with organic farming and handling." In addition, the NOP regulations (§205.600(b)(6)) require that "any synthetic substance used as a processing aid or adjuvant" must be "essential for the handling of organically produced agricultural products."

Low acyl gellan gum is synthetic.

Gellan gum is a product of fermentation of a carbohydrate by *Sphingomonas elodea*, a gram-negative bacterium. Isopropyl alcohol is used to recover the gum from the fermentation medium. The listing on §205.605(a) is annotated to specify "high-acyl form only" because low acyl gellan gum—the subject of this petition—is produced by a chemical process that removes acetyl groups, thus creating a firmer, but synthetic, product.

Low acyl gellan gum is not necessary for organic products.

Several gums are included on the National List for use in processing of organic foods. Their many uses have been examined in a technical review (Gums TR).[7] Most of these gums are agricultural products and are listed on §205.606. Gellan gum, as a product of fermentation, is

[7] Gums Technical Evaluation Report, 2018. Compiled by Nexight Group for the USDA National Organic Program.

listed on §205.605(a). Xanthan gum, another product of fermentation, and alginates are listed on §205.605(b). The Gums TR contains tables listing properties of the various gums. Similar tables are contained in the low acyl gellan gum petition.

The HS says, "[T]here do not appear to be significant differences between the nonsynthetic high acyl and synthetic low acyl forms of gellan gum." Indeed, Tables 13.1 and 13.2 in the petition reveal that there is no unique quality of low acyl gellan gum. The petition justification statement says, "In summary, the unique qualities of low acyl gellan gum are that it can be use[d] at a significantly lower level (<20%) than other gums on the National List. The strength of water dessert gels is increased. It provides the most firm and brittle texture of any gelling agent." This is contradicted by the tables presented by the petitioner, which list five gums currently-listed that "provide significant functionality at 1%" and a range of textures are provided by alginates. Elsewhere in the justification, it is argued, "Use of low acyl gellan gum in hard and soft capsules gives a functionality that cannot be achieved with most materials currently on the National List." Since a given capsule is hard or soft, but not both, there is no need for a single material to provide both.

In addition, we challenge the assumption that qualities used to justify the use of gellan and other gums are necessary and consistent with organic handling. Gums such as this one are often justified using terms like "mouth feel." "Mouth feel" is not an essential characteristic of organic foods. These gums are used in the production of food products like salad dressings and frozen desserts that are produced in kitchens without their use. The presence of these gums, in the opinion of some organic consumers, decreases their taste and appeal. In general, they are used to create "organic" analogs to non-organic products. There may be uses for which the gums are necessary, and their listings should be annotated to restrict them to those uses, in accordance with OFPA §6517(b).

Ozone

Reference: 205.605(b)

Ozone is a strong oxidizer. It is generated on-site. Its principal advantage is that it does not leave toxic residues. However, if there are leaks in the system, it can be very hazardous to workers:

> During water treatment ozone gas is transferred to water. In treating recycled irrigation water, ozone that is not transferred to the water is released as off gas. The concentration of ozone in the off gas of these systems is above the concentration fatal to humans and may contain as much as 3,000 ppm ozone (US EPA, 1999). Off gas containing ozone should be captured and converted to oxygen before release into the atmosphere. Ozone systems that inject directly into the irrigation lines use much lower concentrations of ozone and do not treat off gas.[8]

[8] Crops TAP 2002, lines 285-289.

In crops, it is used for cleaning irrigation systems, but there are no restrictions on its use in handling. It may be used in cleaning produce or in levels of 1-2 ppm to produce an atmosphere for storage of produce that inhibits the growth of mold and bacteria. Although low, these concentrations are ten times the allowable limits in the workplace. Low levels of ozone in the atmosphere can trigger asthma attacks. The subcommittees should determine how much ozone escapes during its use and to what levels workers are exposed.

Ozone should be reviewed in the context of all sanitizers and their needed uses. We ask how the HS (in the Spring discussion) determined that "the positive attributes of ozone and its role in food safety programs outweigh the manageable risks to worker safety."

Sodium hydroxide

Reference: 205.605(b)—prohibited for use in lye peeling of fruits and vegetables.

Sodium hydroxide is a hazardous substance that has many uses. In contrast to the OFPA requirement that National List materials be listed "by specific use or application," the annotation for sodium hydroxide states only prohibited uses. The HS and NOSB should investigate the essentiality of sodium hydroxide for its various uses and annotate the listing to limit its use to those essential uses.

Thank you for your consideration of these comments.

Sincerely,

Terry Shistar, Ph.D.
Board of Directors